DANISH REFUGEE COUNCIL

Architectural Project

Typical Kindergarten

5, Akhalgazrdobis Street, Kareli

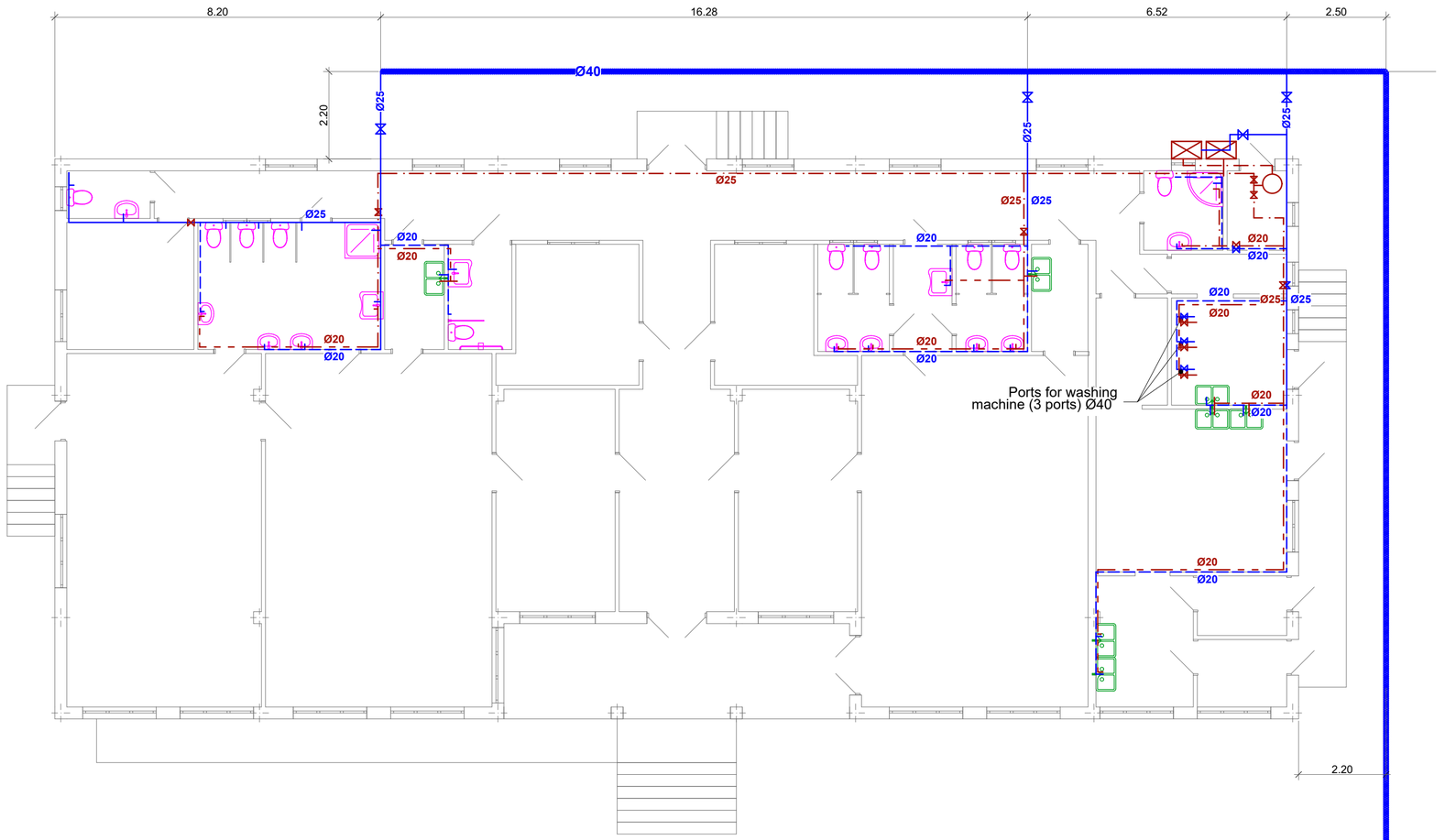
Plumbing, Electrical Engineering,

Heating, and Fire Alarm Systems of the

Project

2020

Plan of Water Suppy System



Cold water pipe of 40 mm D

Cold water pipe of 25 mm D
Cold water pipe of 20 mm D

Hot water pipe of 25 mm D
Hot water pipe of 20 mm D

Double contour heating boiler

Valve

Hot water receiver

Note:
A separate valve (20 mm) will be installed on all toilet bowls.

Water Supply System

The building is supplied with water from the main waterpipe of the town provided on the street. Water is supplied with the inlet under the floor slab of the first floor. The estimated water consumption of the sanitary units of the three groups of the kindergarten, the kitchen, and the staff is 3.4 m3 / h.

The building water supply network is made of polypropylene pipes and fittings. Cold and hot water pipes should be sealed with thermal insulation. First, the thermal insulation on the 2-meter pipe must be covered, then the thermal insulation of mineral wool with a thickness of 5 cm (pressed) must be applied.

The domestic hot water supply of the building is provided by two-circuit heating boilers, creating a stable supply in the receiver.

Sewage System

The internal sewerage network of the building is represented by the main collector of the yard and the internal local networks of the building. The yard collector is connected to the sewer collector on the street, and the bottom of this sewerage manhole should be further specified during the construction phase.

Inside the building, local sewer pipes run under the connecting end-girders and under the concrete floor slab, the sewer network is made with 150, 100, and 50 mm polypropylene pipes and corresponding fittings. In order to ventilate the network, at the end of all junctions there is a stand 50 mm which extends 0.2 m from the ceiling and stops in the ventilated attic. The horizontal sections of the sewerage network are arranged with the following minimal slopes: 0.01 for 150 mm pipes, 0.015 for 100 mm pipes; 0.03 - for 50 mm pipes

DANISH REFUGEE COUNCIL

Typical Kindergarten
5, Akhalgazrdobis Street, Kareli

Project address:
Georgia,
Kareli

Stage:
Architectural project

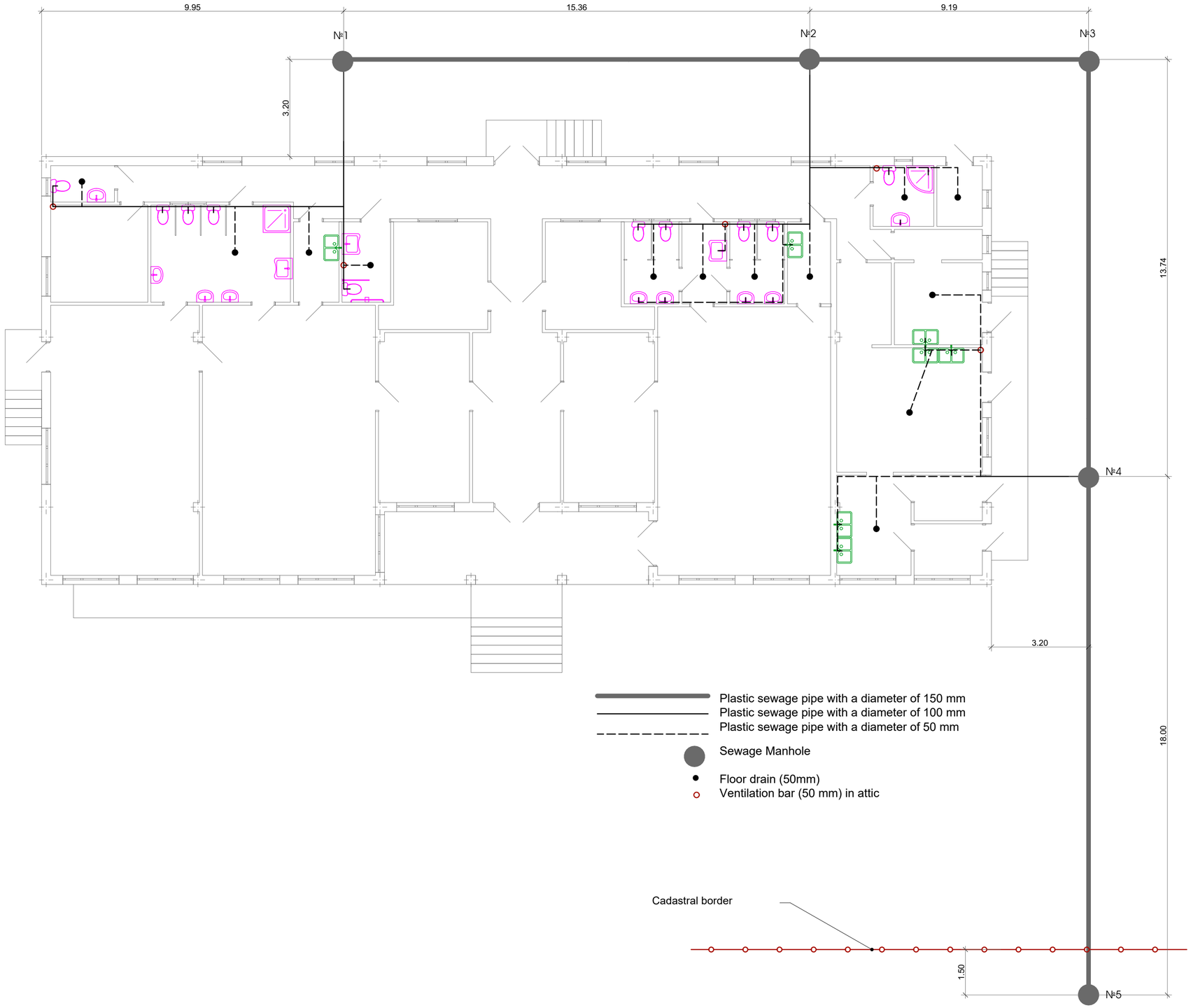
Plan ofr Water Supply System

ბ. ქანთარია
B. Qantaria

ა. გერგედავა
A. Gergedava

Format A - 2

Sewage System Plan



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Typical Kindergarten 5, Akhalgazrdobis Street, Kareli

Project address:
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Plan of Sewage System

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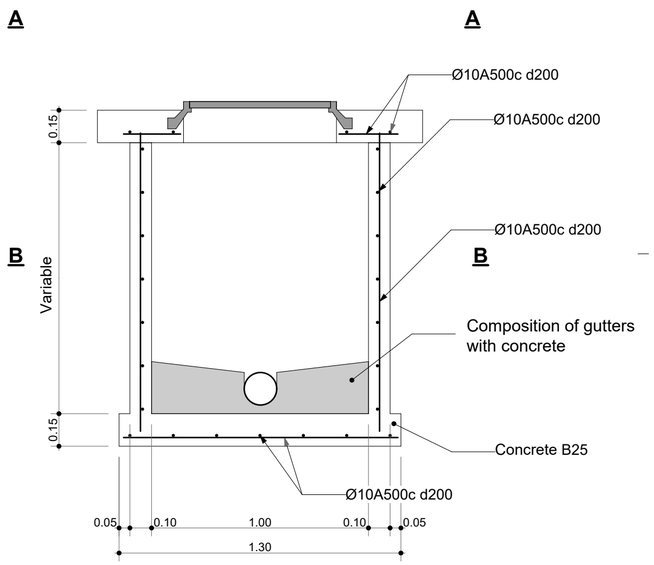
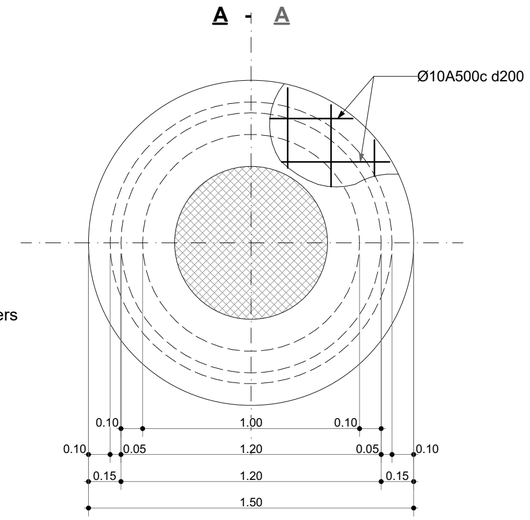
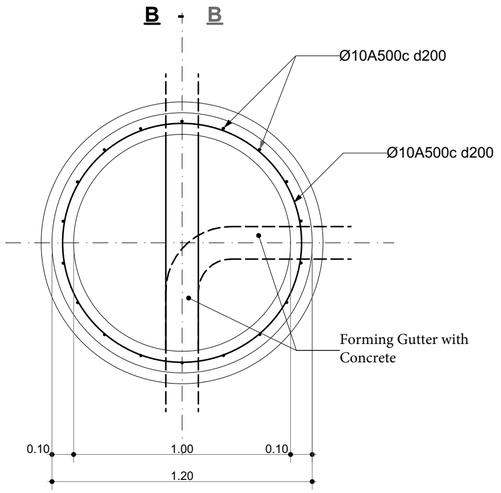
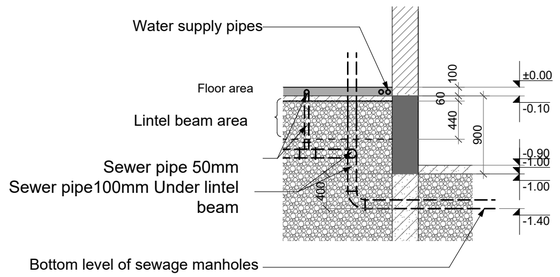
Sewarage Plan







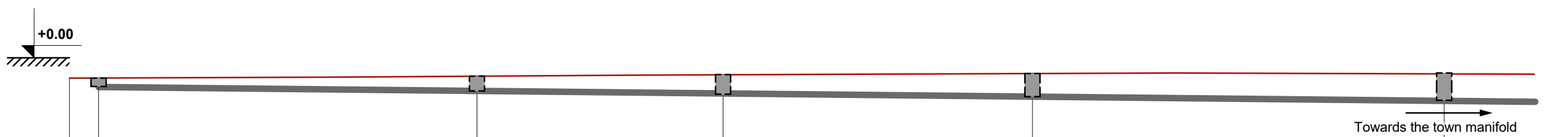
Location of pipes in floor cross section



Specification

List	UoM	Quantity
Watre Suplly		
Wash stand	Set	4
Wash stand for children	Set	7
Wash basin woth fittings for disabled people	Set	1
Kitchen double-sink	Set	7
Wash stand mixer	Set	11
MIxer for wash stand for disapled people	Set	1
Mixer of Kitchen double-sink	Set	7
Children's Toilet bowl Set 11	Set	7
Toilet bowl	Set	2
Toilet bowl with accessories for disabled	Set	1
Shower tray 90x90	Set	2
Shower mixer	Set	2
Plastic hot water pipe with fiberglass 25 mm	meter	95
Plastic hot water pipe with fiberglass 20 mm	metri	37
Plastic cold water pipe 25 mm	meter	130
Plastic cold water pipe 20mm	meter	78
Plastic cold water pipe 40mm	meter	116
Valve 40	pcs	1
Valve 25	pcs	7
Valve 20 pcs	pcs	24
Fittings, 60% of pipe cost		
Searage		
50mm thick plastic sewer pipe	meter	94
100mm thick plastic sewer pipe	meter	88
150m thick plastic sewer pipe	meter	110
Stainless steel floor drainage 50 mm	pcs	13
Sewage manhole set	set	5
Fittings, 60% of pipe cost		

Longitudinal Profile of Sewage Collector



Bottom mark of pipe	648.90	648.75	648.65	648.50	648.30
Centre-line ground elevation	649.42	649.40	649.30	649.15	648.95
Design elevation of the manhole cover	649.50	649.45	649.35	649.20	649.00
Manhole depth in cm	60	70	70	70	70
Diameter of pipe in mm	150	150	150	150	
slope	i=0.01		i=0.01		
distance	15.4	9.20	40.5	13.8	18.0
Marking point	Manhole #1	Manhole #2	Manhole #3	Manhole #4	Manhole #5

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Typical Kindergarten 5, Akhalgazrdobis Street, Kareli

Project address:
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Stage:
Architectural project

Longtitudinal profile of the seawge collector , axonometric plans, Specificaion

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Format A - 2

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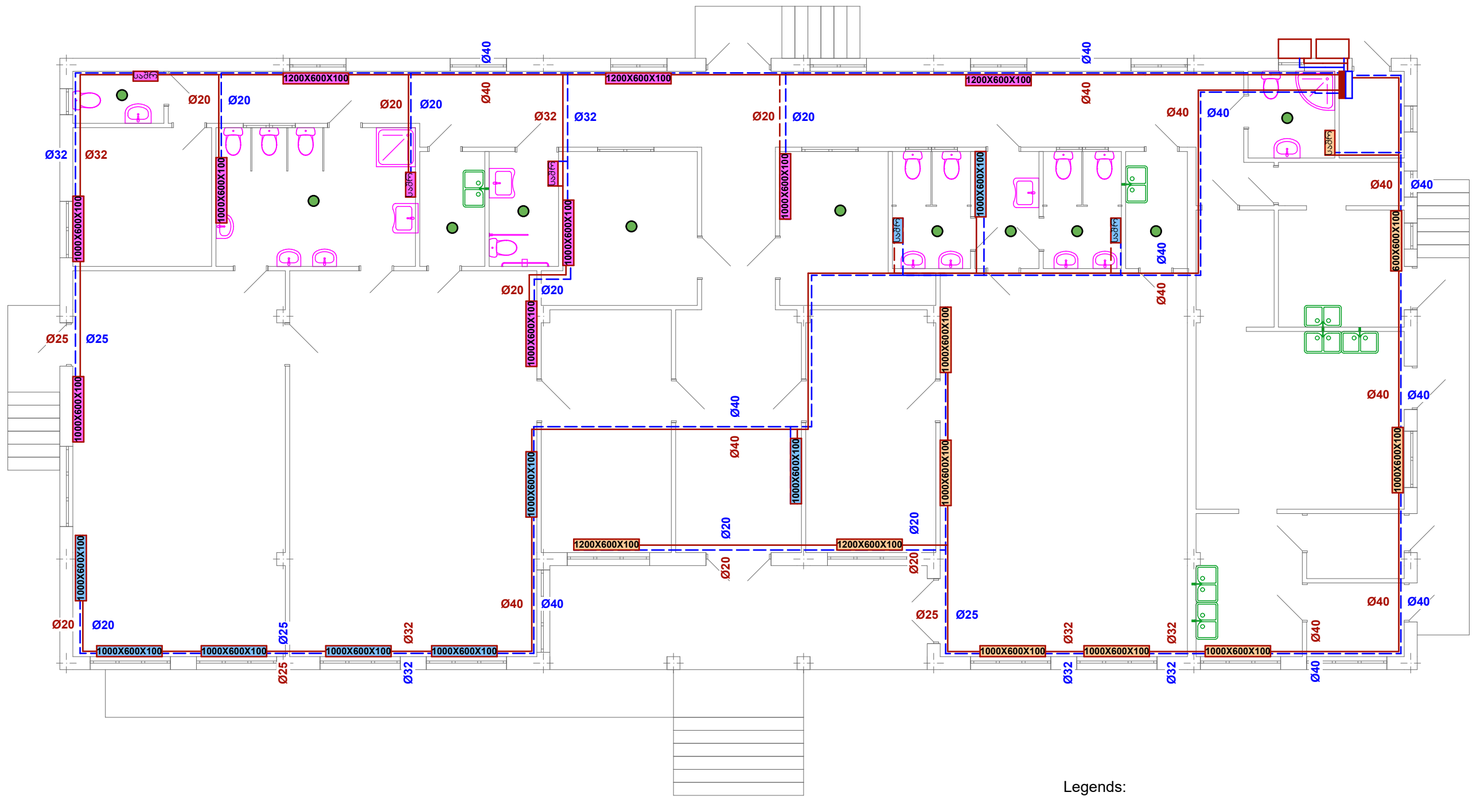
Floor heating system plan



Legends:

- 1000X600X100 — Steel panel radiator
- სველი — Steel drier
- Plastic inlet pipe
- Plastic return pipe
- Double contour heating boiler
- Manifolds
- Fan (for 100 mm pipe)

Heating System

Explanatory Letter

-The designed heating system is double-pipe, horizontal. -The heat conductor is water. With a temperature of 65-50C. -Metal panel radiators are used as heating device, 600 mm height

- Pipes will be installed while floor preparation with insulation.
- External heat reporting temperature accepted - 80.
- Heating boilers, two, 40 kW , are selected for heating. Double-contour with coaxial smoke pipe and automation.
- Hydro models and manifolds are installed with boilers.

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Typical Kindergarten 5, Akhalgazrdobis Street, Kareli

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Plan of Heating System

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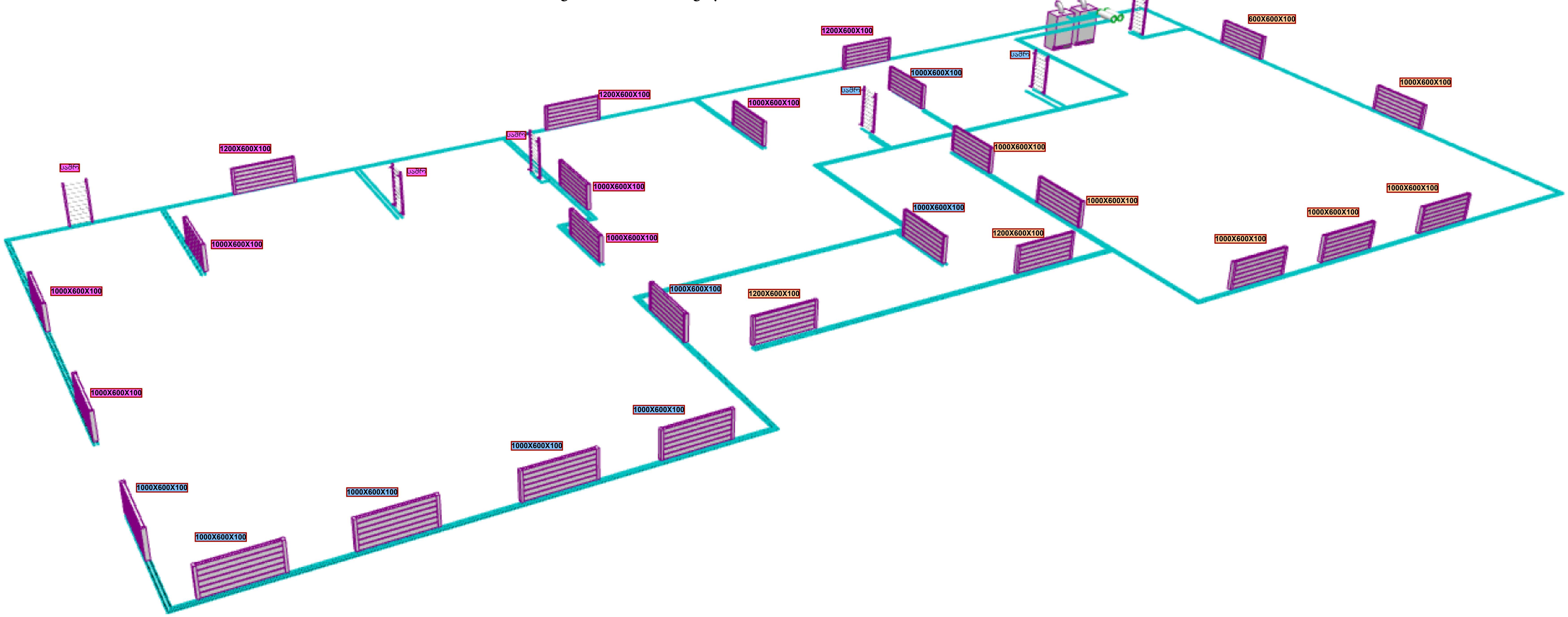
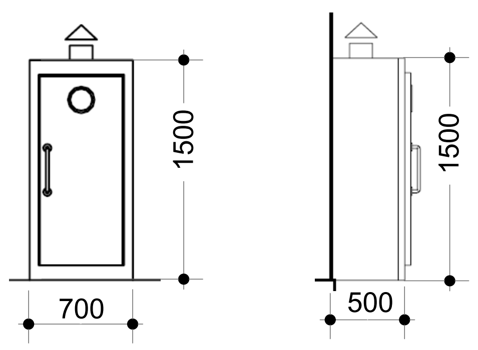
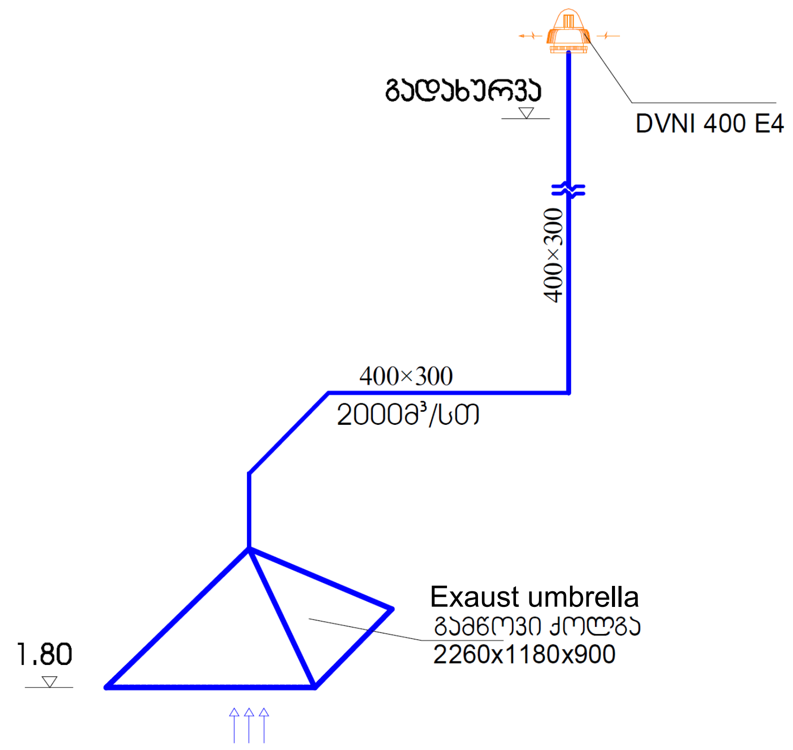
Axonometric Digram of the Heating System



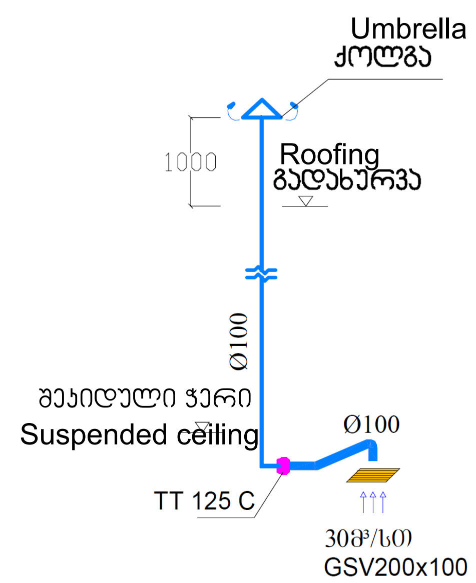
Steel Wall Box for Heating Boiler



Kitchen ventilation plan



Sanitary Units Ventilation Plan



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Axonometric plan of heating system

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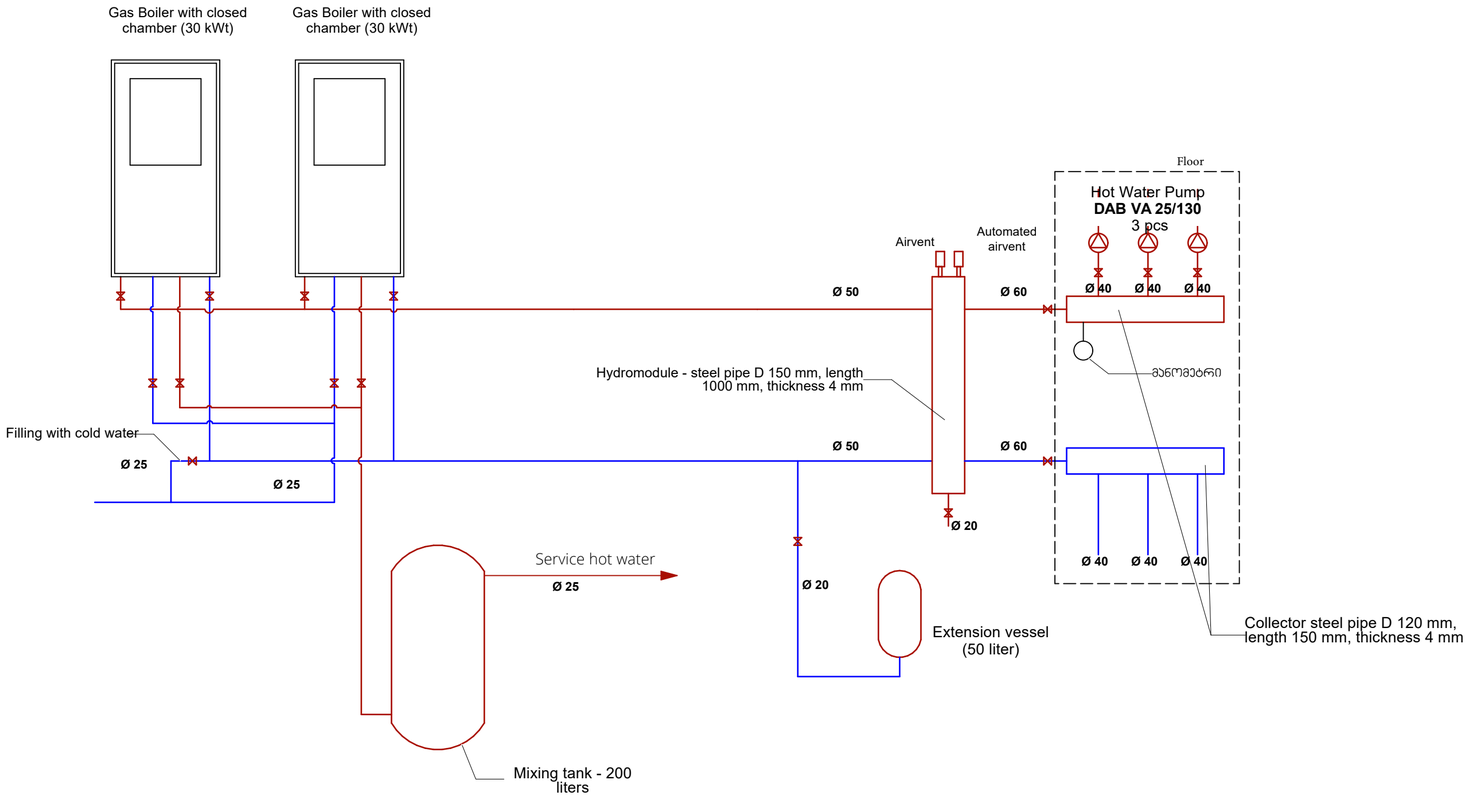
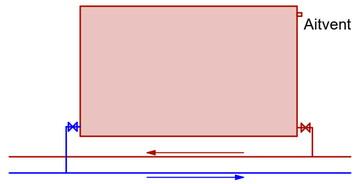
Principal Plan of the Heating System

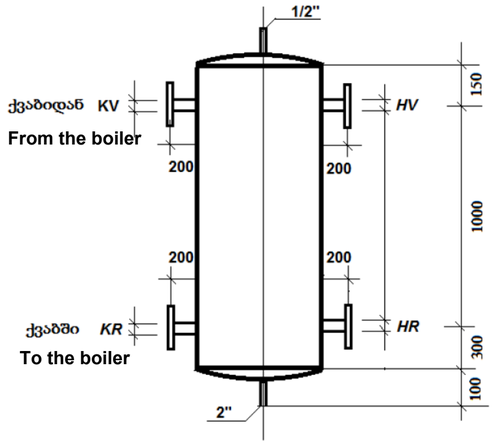


Panel radiator connection diagram



Hydromodule

ჰიდრომოდული



kg/h	D მმ	KV მმ	KR მმ	HV მმ	HR მმ
8000	150	50	50	65	65

Specification

List	UoM	Q-ty
Gas boiler (40 kW) double circuit with coaxial pipe	Set	2
Extension vessel (50 liter)	Set	1
Locking valve 40mm	Pcs	
Safety valve 3.0 atm	Pcs	2
Metal pipe 150mm for collectors	meter	2
Hydromodule 1	Pcs	1
Heating circulation pump DAB VA 25/130	Pcs	3
Automated air vent	Pcs	2
Plastic pipe insulated with fiberglass 40mm	meter	188
Plastic pipe insulated with fiberglass 32mm	meter	121
Plastic pipe insulated with fiberglass 25mm	meter	97
Plastic pipe insulated with fiberglass 20mm	meter	42
fittings 60% of pipe cost		
Steel panel radiators 600X600X100	Pcs	1
Steel panel radiators 1000X600X100	Pcs	20
Steel panel radiators1200X600X100	Pcs	6
Bathroom drier 1200 mm	Pcs	1
Radiator valve on supplying (inlet) pipe	Pcs	32
Radiator ale on return pipe	Pcs	32
Mixer reservoir 200 liter	Pcs	1

DANISH REFUGEE COUNCIL

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Architectural project

Principal plan of the heating system

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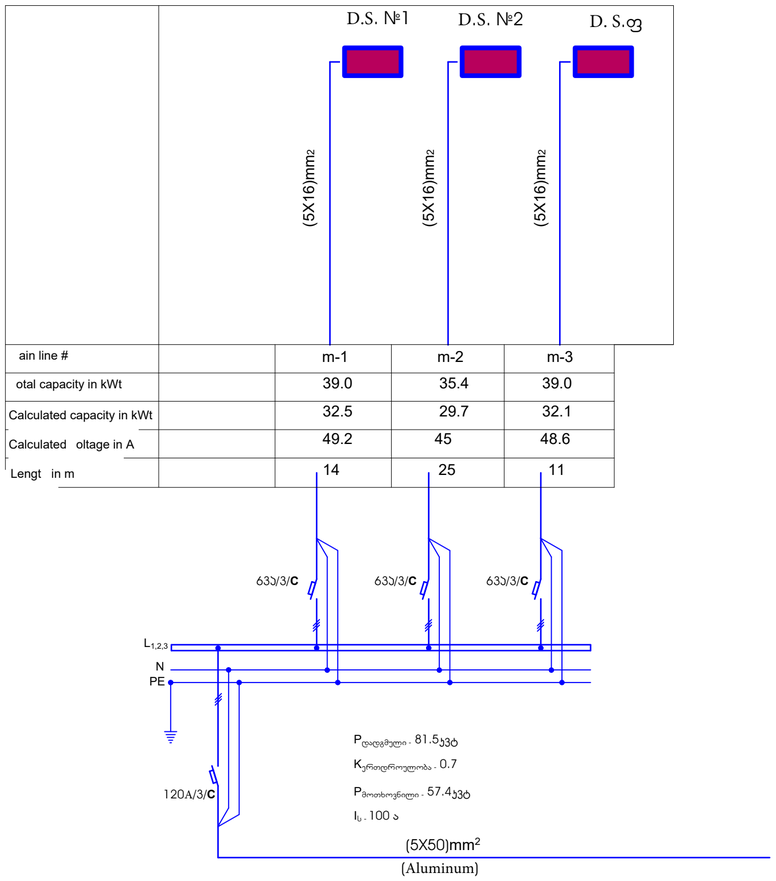
A. Gergedava

Format A - 2

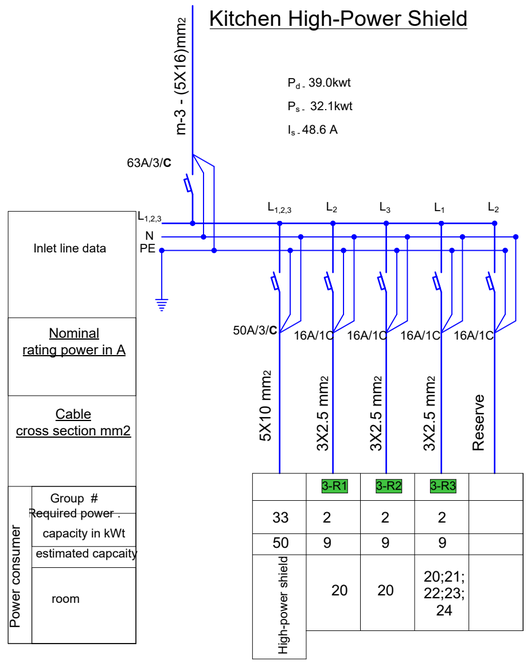
Page 7 Pages 13

Inlet distribution shield



ain line #		m-1	m-2	m-3
otal capacity in kWt		39.0	35.4	39.0
Calculated capacity in kWt		32.5	29.7	32.1
Calculated oltage in A		49.2	45	48.6
Lengt in m		14	25	11

Kitchen High-Power Shield



Inlet line data		3-R1	3-R2	3-R3	
Nominal rating power in A	33	2	2	2	
Cable cross section mm2	50	9	9	9	
Power consumer: Group #	High-power shield	20	20	20;21; 22;23; 24	
Required power . capacity in kWt					
estimated capcaity					
room					

Electric-Engineering Part

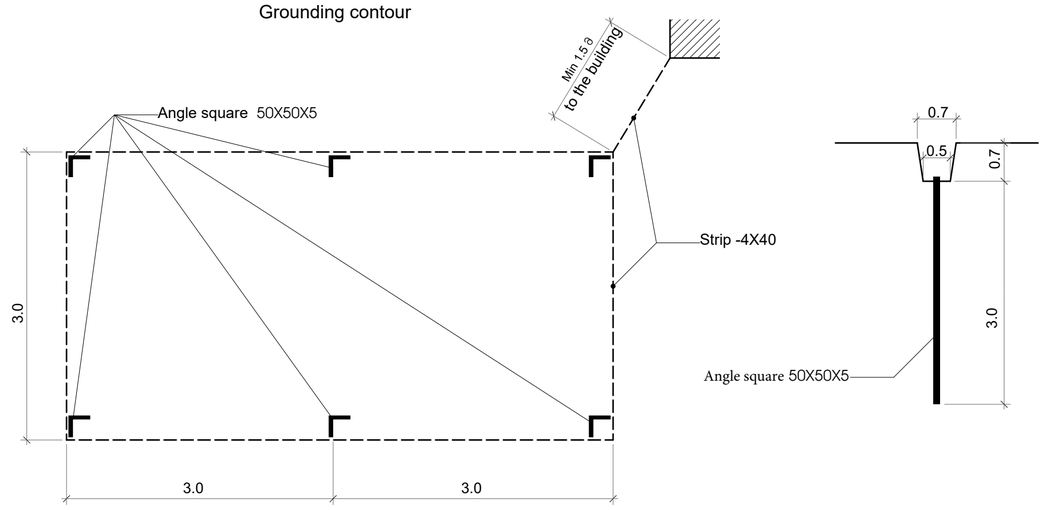
Explanatory Letter

The electrical and technical part of the project of this building is based on the architectural, structural, water supply and sewage parts of the same project.

- In terms of reliability of energy supply, the object belongs to category III.
- Voltage parameters: voltage 400/230 V - Frequency 50 H
- Maximum permissible voltage drop 5% (2.5% on incoming cable, 2.5% on the project site) Grid (L1, L2, L3, N, PE).

The electricity of the building is supplied from the existing network. In order to receive and distribute electricity, there is a distribution shield in the corridor of the building, from where the electricity is supplied to the distribution shields and accordingly to all the units of the building, a separate shield is designed for the supply of kitchen power network.
-Electricity metering is done by a three-phase active power meter, the location of which is determined in agreement with the local electricity service.
- LED bulbs are used for lighting. The height of the installation of plugs for children is 1.8m above the floor.
The entire electricity network is made of a non-halogen copper cable, with double insulation that will be installed on the ceiling and under the plaster of the walls. Under the ceiling and on the ceiling, the cables and wires shall each be inserted separately into plastic pipes, where, in case of need, the appropriate channels will be cut in the walls.
- In the absence of a TN-S network, the system must be adjusted to TN-C-S- It is planned to ground the main distribution shield. Grounding resistance should not exceed 4 warps at any time of the year. - Installation works must be carried out in full compliance with the rules of arrangement of electrical installations.
- The calculation of the illumination network envisages the possibility of replacing the incandescent bulbs in the network.

Grounding contour



Specification

#	List	UoM	Q-ty
1	Inlet-Distribution box,IP rating 43 automatic opening circuit breaker: inlet 150A/3-1 pcs outlet groups - 63 A/3- pcs	set	1
2	Electric distribution box (for lighting) IP rating 30, automatic circuit breaker: inlet 63 A/1- pcs outlet groups - 16A/1-12 pcs, 10A/1-12 pcs	set	2
3	Kitchen high-power shield, IP rating 30 automatic opening circuit breaker : inlet 63A/3-1 pcs, outlet groups 50A/3-1 pcs? 16 A/3-4 pcs	set	1
4	Two-pole outlet socket with the third grounding circuit 10Amp	pcs	29
5	One-pole outlet socket with the third grounding circuit 10Amp	pcs	24
6	One-pole outlet socket air-tight with the third grounding circuit 10Amp	pcs	11
7	One-pole outlet socket for AC , with the third grounding circuit 16Amp	pcs	6
8	Distribution box	pcs	76
9	One-key switch	pcs	7
10	One-key switch, air-tight	pcs	6
11	Two-key switch	pcs	9
12	Two-key switch, air-tight	pcs	15
13	Lighting fixture for room LED 18 W	pcs	64
14	Spot Lighting fixture for room LED 18 W	pcs	30
15	Spot Lighting fixture for room LED 18 W	pcs	22
16	Copper cable with double insulation , cross section 3X1.5 m2	meter	1380
17	Copper cable with double insulation , cross section 3X2.5 m2	meter	1460
18	Inlet copper cable with double insulation, cross section 5X35 m2	meter	60
19	Inlet copper cable with double insulation, cross section 5X16 m2	meter	49

DANISH REFUGEE COUNCIL

Typical Kindergarten
5, Akhalgazrdobis Street, Kareli

Project address:
Georgia,
Kareli

Stage:
Architectural project

Principal Plan of Shields

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A. Gergedava

Format A - 2

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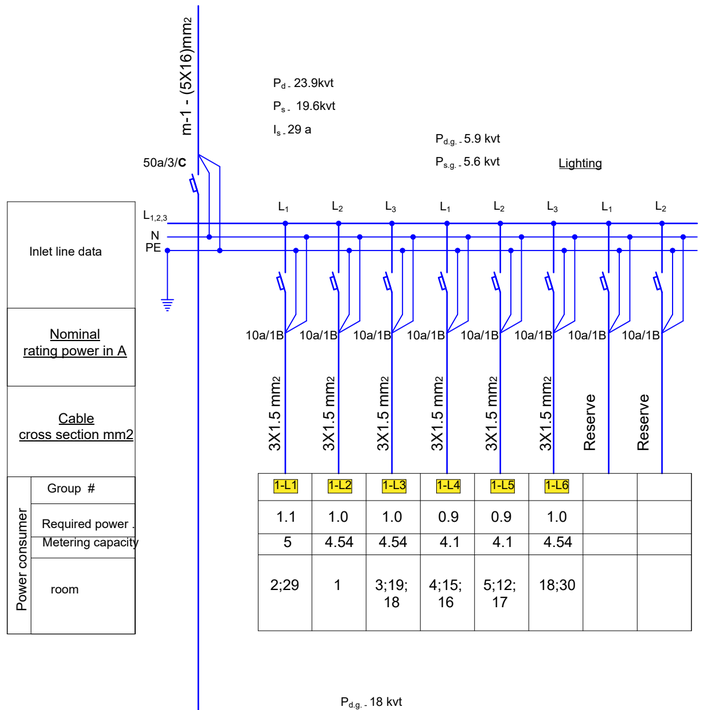
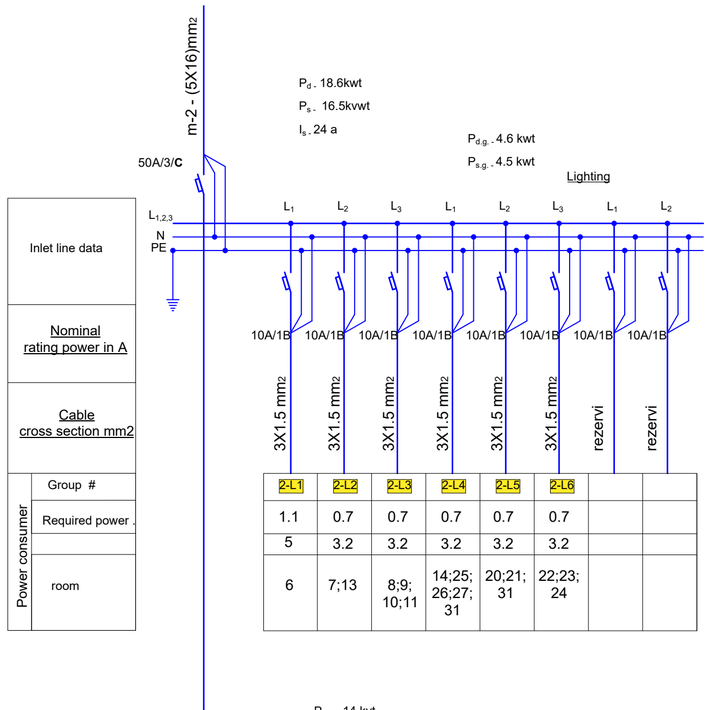
Pricipal Plan of the Distribution Shield #1



Inlet line data									
Nominal rating power in A									
Cable cross section mm2									
Power consumer	Group #	1-L1	1-L2	1-L3	1-L4	1-L5	1-L6		
	Required power .	1.1	1.0	1.0	0.9	0.9	1.0		
	Metering capacity	5	4.54	4.54	4.1	4.1	4.54		
	room	2;29	1	3;19; 18	4;15; 16	5;12; 17	18;30		

Inlet line data									
Nominal rating power in A									
Cable cross section mm2									
Power consumer	Group #	1-R1	1-R2	1-R3	1-R4	1-R5	1-R6	1-R7	
	Required power .	2	2	2	3	3	3	3	
	Metering capacity	9	9	9	13.6	13.6	13.6	13.6	
	room	1;3	2;29	4;5; 12;15; 16;17	15	2	1	12	

Principal Plan of Distribution Box #2



Inlet line data									
Nominal rating power in A									
Cable cross section mm2									
Power consumer	Group #	2-L1	2-L2	2-L3	2-L4	2-L5	2-L6		
	Required power .	1.1	0.7	0.7	0.7	0.7	0.7		
		5	3.2	3.2	3.2	3.2	3.2		
	room	6	7;13	8;9; 10;11	14;25; 26;27; 31	20;21; 31	22;23; 24		

Inlet line data									
Nominal rating power in A									
Cable cross section mm2									
Power consumer	Group #	2-R1	2-R2	2-R3	2-R4	2-R5	2-R6		
	Required power .	2	2	2	2	3	3		
	Metering capacity	9	9	9	9	13.6	13.6		
	room	6;7; 18	8;9; 10;11; 13;18	14;26; 27;25	25	6	13		

DANISH REFUGEE COUNCIL

Typical Kindergarten
5, Akhalgazrdobis Street, Kareli

Project address:
Georgia,
Kareli

Stage:
Architectural project

Principal Plan of Distribtion Shields

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A. Gergedava

ა . ...

ფორმატი Format A - 2

ფურცელი Page	ფურცლები Pages
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Plan of Electric Lighting System

Legend:

- Inlet distribution shield
- Distribution shield
- Two-pole socket
- One-pole socket
- Air-tight plug socket
- Fan (for 100 mm pipe)
- Cooper cable 3X1.5mm^2
- 1-L1 Separate group of lighting network
- Two-pole circuit breaker
- Two-pole circuit breaker air-tight
- One-pole circuit breaker
- One-pole circuit breaker air-tight
- LED lighting fixture for ceiling
- Spot lighting fixture for ceiling
- LED lighting fixture air-tight
- Exit sign

DANISH REFUGEE COUNCIL

Typical Kindergarten
5, Akhalgazrdobis Street, Kareli

Project address:
Georgia, Kareli

Stage:
Architectural project

Plan of electric Lighting of the Floor

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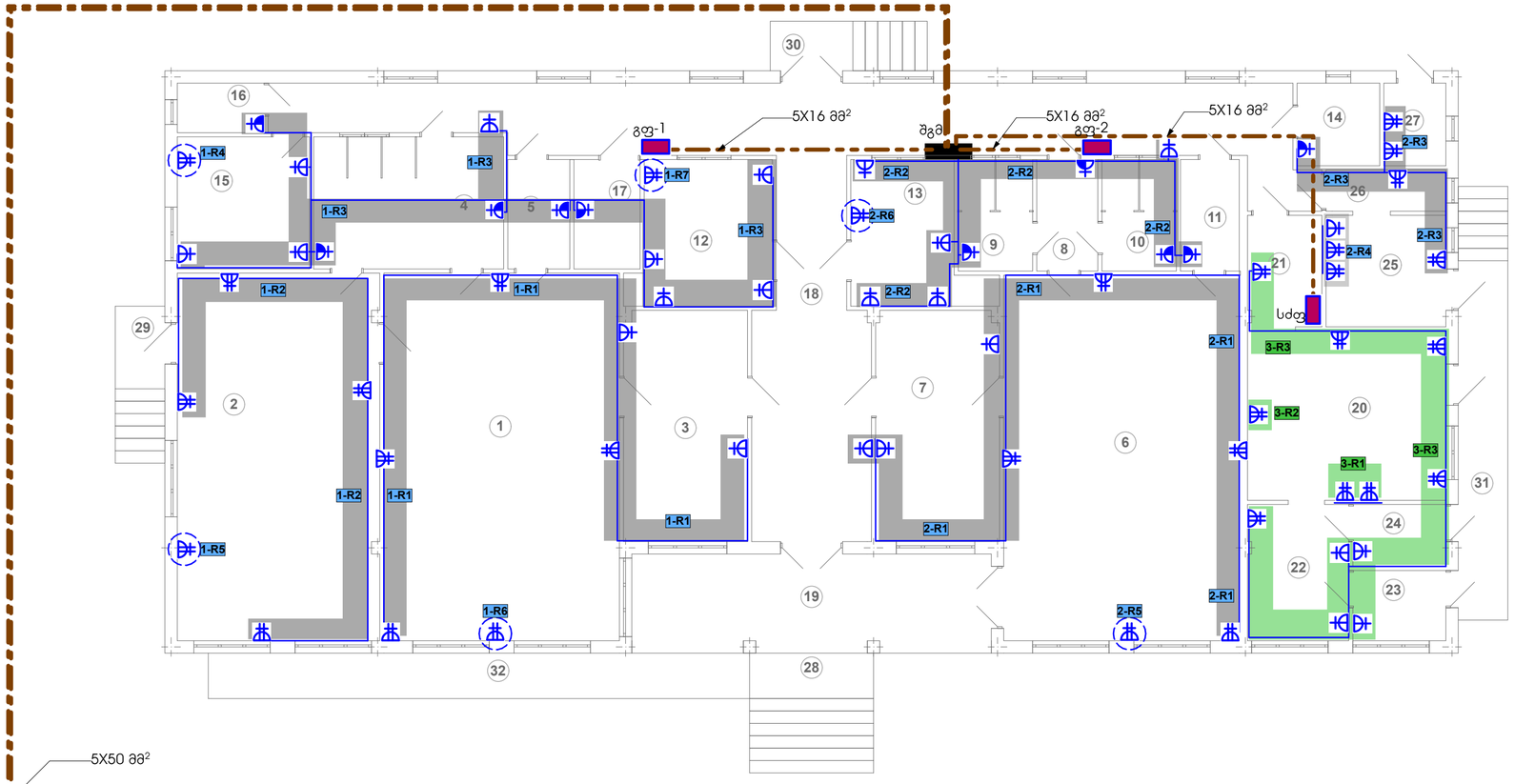
Power Supply Plan of High-Power System



Legends:

- Inlet distribution shield
- Distribution shield
- Two-pole outlet socket
- Two-pole outlet socket for AC
- One-pole outlet socket
- Air-tight plug outlet socket
- Fan (for 100 mm pipe)
- Copper cable 3X1.5mm²
- 1-R1 — Separate groups of high-power network

DANISH REFUGEE COUNCIL

Typical Kindergarten
5, Akhalgazrdobis Street, Kareli

Project address:
Georgia,
Kareli

Stage:
Architectural project

Plan of the High-Power elecric Network on the floor

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ა. გერგედავა
A. Gergedava

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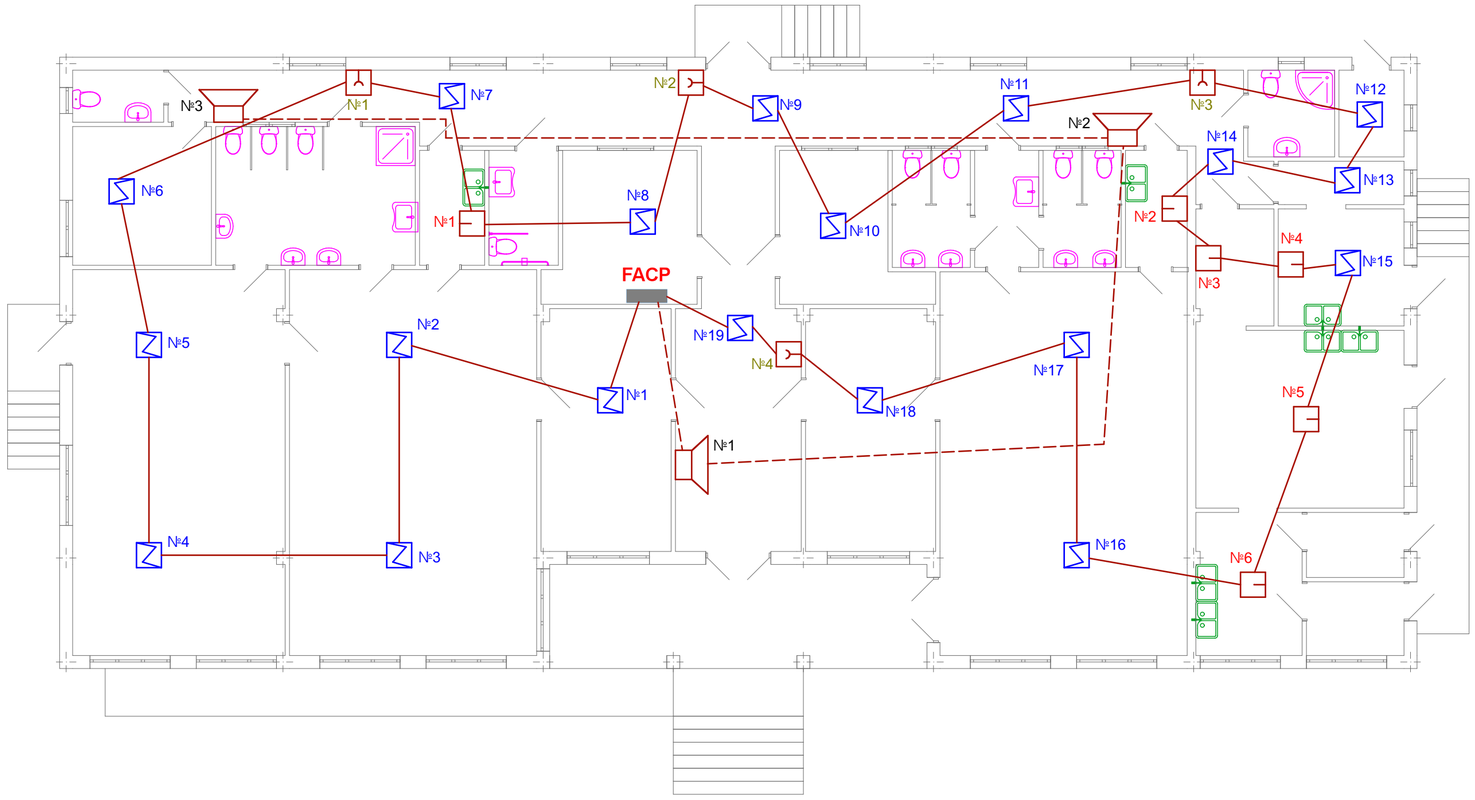
DRC DANISH REFUGEE COUNCIL

Fire Alarm System Plan



Legend:

FACP	Addressable fire contorl panel
	Addressable optic moke detector
	Addressable thermal detector
	Addresable alarm button
	Addressable alarm

Project address:

Georgia,
Kareli

Stage:
Architectural project

Plan of Fire Alarm System

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Format A - 2

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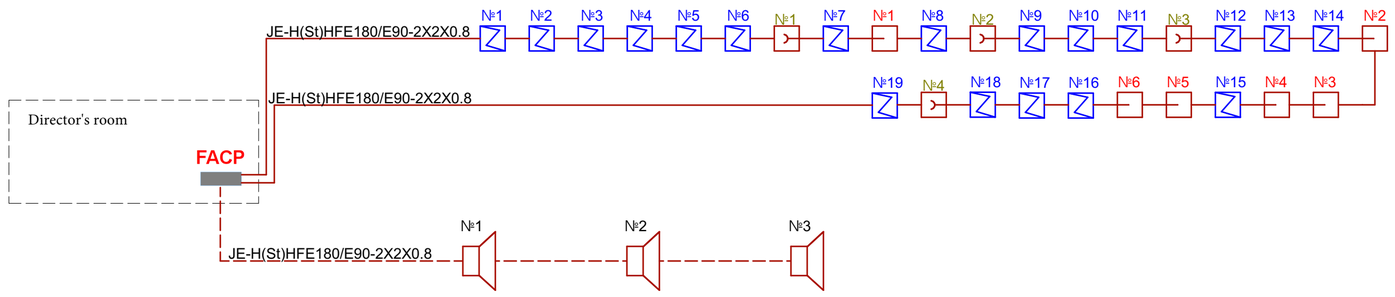
Fire Alarm System

The fire alarm control panel must be installed on the ground floor level in the director's room. The project provides an addressable fire alarm system, the network of which is organized by a circular topology.
The fire extinguisher cable network is built with a 2x2x0.8 mm2 type fire proof cable and must be provide with a separate loop with a 2x2x0.8 mm2 type fire proof cable and should be connected to the fire alarm control station. Fire alarm, smoke, or combined fire detectors must be of the addressable type. Heat, smoke, or combined transmitters are be installed on the ceiling's geometric center (in the case of one broadcaster) or on a ceiling of an equally distributed control area.
Appropriate installation and schematic drawings are attached to the project. Alarm buttons are installed at all exits, at 1.8 m height from the floor. A fire alarm shall be mounted 0.3 m from the ceiling and shall give an alarm of not less than 100 dB / m 2. Schematic drawing and design drawings of fire detectors, hand fire detectors and alarms are attached to the project.

Structural Diagram of the Fire Alarm System



Fire Alarm System			
1	Fire proof cable JE-(St) H FE 180/E90 - 2X2X0.8	m	320
2	Addressble one loup fire control panel	set	1
3	Addressable smoke optic detector	pcs	19
4	Addressable thermal detector	pcs	6
5	Universal addressable base	pcs	25
6	Addressable alarm button	pcs	4
7	Addressable alarm	pcs	3
8	Power supply unit	pcs	1

DANISH REFUGEE COUNCIL

Typical Kindergarten
5, Akhalgazrdobis Street, Kareli

Project address:
Georgia,
Kareli

Stage:
Architectural project

Structural Plan of Fire Alarm System

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B. Qantaria

ა. გერგედავა
A. Gergedava

Format A - 2

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